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SEQUENCE LISTING

<110> Novopharm Biotech Inc.

<120> ENHANCED PHAGE DISPLAY LIBRARIES AND METHODS FOR PRODUCING SAME

<130> 33956-41

<140> PCT

<141> 2000-09-07

<150> CA2282179

<151> 1999-09-07

<150> US60/163,546

<151> 1999-11-04

<160> 60

<170> PatentIn Ver. 2.1

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cttcaaataatga gcagtcgtcag agctgaggac acggctgtgt attactgtgt gaaagacagg 300  
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Glu Val Gln Leu Gln Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly  
1 5 10 15

Ser Leu Arg Leu Ser Cys Ser Ala Ser Gly Phe Thr Phe Ser Ser Tyr  
20 25 30

Ala Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Tyr Val  
35 40 45

Ser Ala Ile Ser Ser Asn Gly Gly Ser Thr Tyr Tyr Ala Asp Ser Val  
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr  
65 70 75 80

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Leu Gln Met Ser Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys  
85 90 95

Val Lys Asp Arg Leu Lys Val Glu Tyr Tyr Asp Ser Ser Gly Tyr Tyr  
100 105 110

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Thr Val Ser Ser  
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Ser Tyr Ala Met His  
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Ala Ile Ser Ser Asn Gly Gly Ser Thr Tyr Tyr Ala Asp Ser Val Lys  
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<210> 5

<211> 23

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<213> human

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<223> Description of Artificial Sequence:primer

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<210> 16  
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<210> 19  
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<400> 23
gcggataaca atttcacaca ggaa 24

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<220>
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<212> DNA
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<210> 26
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<223> Description of Artificial Sequence:primer

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<210> 28

<211> 27

<212> DNA

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<223> Description of Artificial Sequence:primer

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<210> 29

<211> 35

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<223> Description of Artificial Sequence:primer

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<223> Description of Artificial Sequence:primer

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<223> Description of Artificial Sequence:primer

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51

<210> 33

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<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:primer

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<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:primer

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<212> DNA

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<223> Description of Artificial Sequence:primer

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<211> 396  
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ccagggaaagg aacgtgaagg tggggggtagt atttagtagta atgggggttag cacatactac 180  
gcagactccg tgaagggcag attcaccatc tccagagaca attccaagaa cactctgtat 240  
cttcaa atga gcagtc tgag agctgaggac acggctgtgt attactgtgc agcagacagg 300  
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<210> 37  
<211> 132  
<212> PRT  
<213> human (modified)

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Glu Val Gln Leu Gln Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly  
1 5 10 15

Ser Leu Arg Leu Ser Cys Ser Ala Ser Gly Phe Thr Phe Ser Ser Tyr  
20 25 30

Ala Met His Trp Val Arg Gln Ala Pro Gly Lys Glu Arg Glu Gly Val  
35 40 45

Ser Ala Ile Ser Ser Asn Gly Gly Ser Thr Tyr Tyr Ala Asp Ser Val  
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr  
65 70 75 80

Leu Gln Met Ser Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys  
85 90 95

Ala Ala Asp Arg Leu Lys Val Glu Tyr Tyr Asp Ser Ser Gly Tyr Tyr  
100 105 110

Val Ser Arg Phe Gly Ala Phe Asp Ile Trp Gly Gln Gly Thr Thr Val  
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Thr Val Ser Ser  
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ccagggaaagg gactggaata tggggggtagt atttagtagta atgggggttag cacatactac 180  
gcagactccg tgaagggcag attcaccatc tccagagaca attccaagaa cactctgtat 240

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cttcaaatga gcagtctgag agctgaggac acggctgtgt attactgtgt gaaagacagg 300  
ttaaaaagtgg agtactatga tagtagtggt tattacgttt ctcggttcgg tgctttgat 360  
atctggggcc aaggacaac ggtcaccgtc tcata 396

<210> 39  
<211> 132  
<212> PRT  
<213> human (modified)

<400> 39  
Glu Val Gln Leu Gln Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly  
1 5 10 15  
  
Ser Leu Arg Leu Ser Cys Ser Ala Ser Gly Phe Thr Phe Ser Ser Tyr  
20 25 30  
  
Ala Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Tyr Val  
35 40 45  
  
Ser Ala Ile Ser Ser Asn Gly Gly Ser Thr Tyr Tyr Ala Asp Ser Val  
50 55 60  
  
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr  
65 70 75 80  
  
Leu Gln Met Ser Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys  
85 90 95  
  
Val Lys Asp Arg Leu Lys Val Glu Tyr Tyr Asp Ser Ser Gly Tyr Tyr  
100 105 110  
  
Val Ser Arg Phe Gly Ala Phe Asp Ile Trp Gly Gln Gly Thr Thr Val  
115 120 125  
  
Thr Val Ser Ser  
130

<210> 40  
<211> 396  
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gcagactccg tgaagggcag attcaccatc tccagagaca attccaagaa cactctgtat 240  
cttcaaatga gcagtctgag agctgaggac acggctgtgt attactgtgc agcagacagg 300  
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<210> 41  
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<400> 41

Glu Val Gln Leu Gln Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly  
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Ser Leu Arg Leu Ser Cys Ser Ala Ser Gly Phe Thr Phe Ser Ser Tyr  
20 25 30

Ala Met His Trp Val Arg Gln Ala Pro Gly Lys Glu Arg Glu Gly Val  
35 40 45

Ser Ala Ile Ser Ser Asn Gly Gly Ser Thr Tyr Tyr Ala Asp Ser Val  
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr  
65 70 75 80

Leu Gln Met Ser Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys  
85 90 95

Ala Ala Asp Arg Leu Lys Val Glu Tyr Tyr Asp Ser Ser Gly Tyr Tyr  
100 105 110

Val Ser Arg Phe Gly Ala Phe Asp Ile Trp Gly Gln Gly Thr Thr Val  
115 120 125

Thr Val Ser Ser  
130

<210> 42

<211> 396

<212> DNA

<213> human (modified)

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ccagggaaagg aacgtgaagg tggggcagtttcaatgtt attagtagta atgggggttag cacatactac 180  
gcagactccg tgaagggcag attcaccatc tccagagaca attccaagaa caactctgtat 240  
cttcaaatga gcagttctgag agctgaggac acggctgtgtt attactgtgc agcagacagg 300  
ttaaaaatgg agtactatga tagttgcgtt tattacgttt ctgggttcgg tgctttgtat 360  
atctggggcc aaggacaac ggtcaccgtc tcata 396

<210> 43

<211> 132

<212> PRT

<213> human (modified)

<400> 43

Glu Val Gln Leu Gln Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly  
1 5 10 15

Ser Leu Arg Leu Ser Cys Ser Ala Ser Gly Phe Thr Phe Ser Ser Tyr  
20 25 30

Cys Met His Trp Val Arg Gln Ala Pro Gly Lys Glu Arg Glu Gly Val  
35 40 45

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Ser Ala Ile Ser Ser Asn Gly Gly Ser Thr Tyr Tyr Ala Asp Ser Val  
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr  
65 70 75 80

Leu Gln Met Ser Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys  
85 90 95

Ala Ala Asp Arg Leu Lys Val Glu Tyr Tyr Asp Ser Cys Gly Tyr Tyr  
100 105 110

Val Ser Arg Phe Gly Ala Phe Asp Ile Trp Gly Gln Gly Thr Thr Val  
115 120 125

Thr Val Ser Ser  
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<210> 44

<211> 396

<212> DNA

<213> human (modified)

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ccagggagg gactggaata tgttttagt attagtagta atggggtagt cacatactac 180  
gcagactccg tgaagggcag attcaccatc tccagagaca attccaagaa cactctgtat 240  
cttcaaataa tgaatgttgc agctgaggac acggctgtgtt attactgtgtt gaaagacagg 300  
ttaaaaatgg agtactatga tagtagtggg tattacgttt ctgggttcgg tgctttgtat 360  
atctggggcc aaggacaac ggtcacccgtc tcata 396

<210> 45

<211> 132

<212> PRT

<213> human (modified)

<400> 45

Glu Val Gln Leu Gln Glu Ser Gly Gly Leu Val Gln Pro Gly Gly  
1 5 10 15

Ser Leu Arg Leu Ser Cys Ser Ala Ser Gly Phe Thr Phe Ser Ser Tyr  
20 25 30

Ala Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Tyr Val  
35 40 45

Ser Ala Ile Ser Ser Asn Gly Gly Ser Thr Tyr Tyr Ala Asp Ser Val  
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr  
65 70 75 80

Leu Gln Met Ser Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys  
85 90 95

Val Lys Asp Arg Leu Lys Val Glu Tyr Tyr Asp Ser Ser Gly Tyr Tyr  
 100 105 110

Val Ser Arg Phe Gly Ala Phe Asp Ile Trp Gly Gln Gly Thr Thr Val  
 115 120 125

Thr Val Ser Ser  
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<210> 46  
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<220>  
<223> Description of Artificial Sequence: recombinant  
A6-derived peptide

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Glu Tyr Lys Asp Phe Asp Ile  
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<211> 23  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: recombinant  
A6-derived peptide

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Asp Tyr Lys Glu Phe Asp Ile  
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<211> 23  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: recombinant  
A6-derived peptide

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Ala Ala Ile Gln Thr Glu Thr Ala Arg Trp Cys Asp Arg His Pro Val  
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Ser Tyr Lys Met Phe Asp Ile

<210> 49  
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A6-derived peptide

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Gln Thr Glu Thr Gln Pro Leu Tyr Asn Asp Cys Ile Leu Arg Gln Ala  
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Gly Tyr Lys Trp Phe Asp Ile  
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<212> PRT  
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<220>  
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A6-derived peptide

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Asp Tyr Lys His Phe Asp Ile  
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<210> 51  
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<212> PRT  
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<223> Description of Artificial Sequence: recombinant  
A6-derived peptide

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Gly Leu Ser Gly Ser Arg Pro Asn Glu Gln Cys Asp Tyr Lys Thr Gly  
1 5 10 15

Asp His Val Gln Phe Asp Ile  
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<210> 52  
<211> 23  
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<213> Artificial Sequence

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<223> Description of Artificial Sequence: recombinant  
A6-derived peptide

&lt;400&gt; 52

Leu Ser Gly Gln Asn Tyr Thr Lys Thr Arg Cys Leu Val Met Gln Asn  
1 5 10 15Asp Tyr Lys Met Phe Asp Ile  
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&lt;210&gt; 53

&lt;211&gt; 23

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: recombinant  
A6-derived peptide

&lt;400&gt; 53

Thr Ala Glu Pro Ala Leu Ser Pro Gln Ala Cys Met Thr Lys Glu Arg  
1 5 10 15Gln Tyr Lys Asp Phe Asp Ile  
20

&lt;210&gt; 54

&lt;211&gt; 23

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: recombinant  
A6-derived peptide

&lt;400&gt; 54

Glu Thr Tyr Met Tyr Thr Arg Gly Lys Tyr Cys Arg Ala Leu Ser Ala  
1 5 10 15Asp Tyr Lys Leu Phe Asp Ile  
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&lt;210&gt; 55

&lt;211&gt; 23

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: recombinant  
A6-derived peptide

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Glu Thr Tyr Met Tyr Thr Arg Gly Lys Tyr Cys Arg Ala Leu Ser Ala  
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Asp Tyr Lys Leu Phe Asp Ile  
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<211> 23  
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<220>  
<223> Description of Artificial Sequence: recombinant  
A6-derived peptide

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Asp Tyr Lys Lys Phe Asp Ile  
20

<210> 57  
<211> 23  
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<223> Description of Artificial Sequence: recombinant  
A6-derived peptide

<400> 57  
Gly Arg Tyr Phe Gln Ser Lys Ile Thr Ser Cys Glu Asn Asn Asp Arg  
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Asp Tyr Lys Leu Phe Asp Ile  
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<210> 58  
<211> 23  
<212> PRT  
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<220>  
<223> Description of Artificial Sequence: recombinant  
A6-derived peptide

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Glu Tyr Lys Asp Phe Asp Ile  
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<210> 59  
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<213> Artificial Sequence

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<223> Description of Artificial Sequence:primer

<400> 59

gccaccacta gcttgtaatt g

21

<210> 60

<211> 54

<212> DNA

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<223> Description of Artificial Sequence:primer

<400> 60

caattacaag aaagtggtgg cggactggtg caaccaggag gatccctgag actc

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